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TITLE: Self Managing the Consequences of Major Limb Trauma

PRINCIPAL INVESTIGATOR: Ellen J. MacKenzie, Ph.D.

CONTRACTING ORGANIZATION: Johns Hopkins University
                                              Baltimore, MD 21205

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Ellen J. MacKenzie, Ph.D.

E-Mail: emackenz@jhsph.edu

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14. ABSTRACT

The objective of this research is to develop and evaluate the efficacy of a computer-based self management program (heretofore referred to as NextSteps Program) for reducing secondary conditions and improving function following major lower limb trauma. The intervention will build on widely accepted self-management programs developed for persons with arthritis as well as components of a face-to-face self-management program for civilians with long-standing limb loss. It will be necessary, however, to tailor the content and delivery of these programs to better accommodate the needs of a young, acutely injured population. Specific needs not typically addressed in the existing programs include the management of acute anxiety and post-traumatic stress disorder (PTSD), and the maintenance or acquisition of employment or return to active duty. If shown to be efficacious, computer based self management programs for the acutely injured will provide a much-needed adjunct to the orthopedic care now available and contribute to a comprehensive trauma management program to improve long-term outcomes and quality of life. The military version of SM program will provide injured soldiers with an ongoing mechanism of support as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.

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Self Management, Trauma, Online Learning

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Self-Managing the Consequences of Major Limb Trauma
Annual Report

April 2009

INTRODUCTION. The objective of this research is to develop and pilot of a computer-based self management program (heretofore referred to as NextSteps Program) for reducing secondary conditions and improving function following major lower limb trauma. The intervention will build on widely accepted self-management programs developed for persons with arthritis as well as components of a face-to-face self-management program for civilians with long-standing limb loss. It will be necessary, however, to tailor the content and delivery of these programs to better accommodate the needs of a young, acutely injured population. Specific needs not typically addressed in the existing programs include the management of acute anxiety and post-traumatic stress disorder (PTSD), and the maintenance or acquisition of employment or return to active duty. Specific aims of the project are: (1) to pilot the face-to-face self-management program for persons sustaining major limb trauma and refine the intervention based on feedback; (2) to develop on online version of the self-management program for persons sustaining major limb trauma (heretofore referred to as Next Steps); (3) to evaluate the feasibility and acceptability of the Next Steps program in 48-60 civilians treated at a large, Level I trauma center; and (4) to modify the Next Steps program for application in the military and to pilot the program in a group of 24 injured soldiers treated at Walter Reed Army Medical Center. We requested and received a no cost extension to complete the study.

If shown to be efficacious, computer-based self-management programs for the acutely injured will provide a much-needed adjunct to the orthopedic care now available and contribute to a comprehensive trauma management program to improve long-term outcomes and quality of life. The military version of the SM program will provide injured soldiers with an ongoing mechanism of support as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.

ACCOMPLISHMENT OF YEAR THREE TASKS:

In Year 3 we had planned to (1) complete the translation of content to the Web based application; (2) complete development of the website for accessing lessons; (3) pilot the Next Steps Program with survivors treated at Carolinas Medical Center; and (4) revise the content of the lessons to be more specific to military needs. We are significantly behind schedule due to the unanticipated complexities and cost of translating the self management lessons to an on line format. Nevertheless, we have made substantial progress towards meeting the overall goals of the project. The last 6 months were largely devoted to compressing the number of lessons to 6 weeks (12 lessons) from 8 weeks (16 lessons) - based on input from our consumer advisors; completing the scripts for all 12 lessons and producing videos to be embedded in the lessons; completing the development of graphic elements for the lessons; recording the narration for each lesson; and programming lessons in flash. To facilitate the programming of all lessons into flash (and facilitate the development of similar programs in the future, including the version of NextSteps for the military) we have developed a generic *Course Builder*. This course builder will significantly reduce the time and effort needed to translate lessons into an on-line format. Although to

date we have only translated lessons 1 and 2 , we anticipate that the development of the remaining 10 lessons will proceed quickly and be completed by August 1.

Because of the unanticipated cost and time involved in developing the web based NextSteps program, we are asking for a no cost extension until March 1, 2010. We are also proposing a change in scope of work. Specifically, we are asking that (1) the pilot of Next Steps be reduced in size to include 12-15 survivors instead of the 48 survivors as originally planned; and (2) we engage our military colleagues and service members as advisors to assist us in modifying the content of the Next Steps Program for service members and veterans. We will not have sufficient funds remaining at the end of the project period to fully test the military version of NextSteps at Walter Reed as originally planned.

Also, please note Dr. Renan Castillo (rcastill@jhsph.edu) has been added to the study team as the Project Director and Co-investigator.

A revised timeline is attached (Appendix 1). We are asking for a no cost extension until March 1, 2010 to complete all tasks.

KEY RESEARCH ACCOMPLISHMENTS:

We have developed a professional, accessible website that will serve as the foundation for managing participants in the NextSteps program and streamlined the process for translating content to an online format. The format and content of the flash lessons was reviewed with the CDRMP on March 30, 2009. A copy of the slides for this presentation are attached.

The investigators will be making two presentations about NextSteps in the coming months at the Annual Meetings of the American Telemedicine Association (April, 2009) and at the Third Military Health Research Forum.

REPORTABLE OUTCOMES:

None at this point.

CONCLUSION:

If shown to be efficacious, the NextSteps Program will provide a critical complement to civilian orthopedic care now available in trauma centers throughout the country. Traditionally, we have focused on medical interventions to manage the secondary conditions of anxiety, depression and pain following major trauma. There is growing evidence to suggest these interventions may not be sufficient and that cognitive behavioral interventions are critical in sustaining long-term, quality outcomes.   The planned self-management intervention uses education, self-monitoring, problem solving and skill acquisition to address multiple dimensions of the post trauma experience. Cultivation of self-efficacy, adaptive behavior, coping skills and relapse management strategies will enable participants to employ learned skills to successfully address the multiple medical and psychosocial problems they encounter post injury.

A key consideration in designing the proposed NextSteps Program is the potential for replication and overall cost-effectiveness. Advances in computer technology present the opportunity to develop multimedia, interactive self-management interventions that have the potential to reach large numbers of individuals in a cost-effective manner.

Year 3 was a critical year in the development of the on-line program. The lesson development is well underway and will provide the final piece of the intervention. In the coming year, we will complete the lessons and pilot the intervention in two cohorts at Carolinas Medical Center, and convene an advisory committee tasked with adapting the program to a military population.

This project has direct relevance for the military. Hundreds of young Americans have sustained severe limb injuries in the Iraq and Afghanistan conflicts. Following separation from military service and reintegration into society, disability from injuries will impact these individuals for the remainder of their lives. The military version of the NextSteps program will assist in assuring that these soldiers achieve the highest level of function and quality of life. Development of an online application, in particular, will be cost-effective and provide an ongoing mechanism to provide support for injured soldiers as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.

REFERENCES: None

APPENDICES: Attached are 2 appendices.

Appendix 1: Revised Timeline for Year IV

Critical Event	Projected Completion
• **Website Development**	
Complete XHTML Production	July 1, 2009
Develop Chat Functionality	July 1, 2009
Ruby on Rails Prduciton	July 1, 2009
• **Lesson Development**	
Complete Videos	May 30, 2009
Complete Recording of Narration for all Lessons	June 15, 2009
Complete Course Builder	May 15, 2009
Complete Interactive Flash Programming – Lessons 1-3	June 15, 2009
Complete Interactive Flash Programming – Lessons 4-6	August 1, 2009
Beta Test Program with Consumer Advisors & Make Revisions	September 15, 2009
• **Pilot Next Steps in Civilian Population**	
Obtain Preliminary Approval from Carolinas IRB	Completed
Obtain FINAL Approval from Carolinas IRB and DOD	September 15, 2009
Screen Eligible Patients in Trauma Centers	October 1, 2009
Enrollment and Baseline Assessment	November 1, 2009
Analysis and Recommendations	January 15, 2010
• **Make Revisions Suitable to a Military Population**	
Convene Advisors	October 15, 2009
Make Recommendations for Changes to Program	February 15, 2010
• **Development of Final Report and Recommendations**	February 28, 2010

CDMRP Review
Development of NextSteps

CENTER FOR INJURY
RESEARCH & POLICY
20 years of making discoveries that make a difference

Development of NextSteps:
An On-Line Self Management Program
for Trauma Patients

*Update for Congressionally Directed
Medical Research Programs
October, 2009*

A Partnership . . .

- Johns Hopkins Schools of Medicine and Public Health
- Command Create
- Bricka Bracka
- The American Trauma Society

Our Survivor and Family Advisors:

- Robert G. Baldassari (from Fairfax, VA)
- Adam Blomberg, MD (from Boston, MA)
- Brenda Breitenbach (from Severna Park, MD)
- Pam Bryan (from Madison, TN)
- Sherry Chapman (from Coventry, CT)
- Carrie Krug, DPT (from Baltimore, MD)
- Scott Shields, M.B.A. (from Upper Marlboro, MD)
- Steve Wilkinson (from Miami, FL)

INDIVIDUAL CHARACTERISTICS

THE ENVIRONMENT
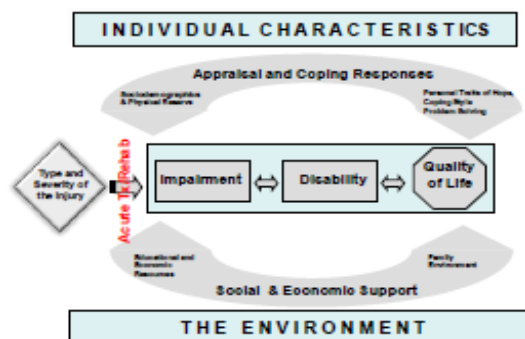
Opportunities for Improving Outcomes

- Self management (SM) Programs target these mutable characteristics using cognitive behavioral interventions
- Shown to be efficacious and have gained widespread application in arthritis and other conditions for which pain and disability common, but . . .
- Not customized for specific needs following trauma

Self Management Interventions

- 6-8 weekly group sessions facilitated by a trained group leader
- Emphasis in each session on:
  - *Knowledge Acquisition*
  - *Problem Solving*
  - *Skill acquisition*
  - *Self Monitoring*
  - *Identifying and Building on Strengths*

CDMRP Review
Development of NextSteps

Self Management Programs
Core Value of Patient Centered Care

✓ Empowers patients to become active participants in their own care
✓ Patients (along with their care providers) are held accountable for good outcomes

Self Management for Amputees

PALS

PROMOTING AMPUTEE LIFE SKILLS

- Course developed in collaboration with the *Amputee Coalition of America* (and funded by CDC)
- Evaluated in a RCT: 50 peer support groups (450 people) were randomized
- Now being implemented by the ACA and at Walter Reed

Arch Phys Med and Rehabil 90(3):373, 2009.

Self Management for Trauma Survivors

nextsteps

Self Management Program

- Focus on prevention of secondary conditions
- Emphasize return to work
- Acknowledge high prevalence of acute anxiety and PTSD
- Integrated into the Trauma Survivors Network - TSN

The Trauma Survivors Network
http://www.traumasurvivorsnetwork.org

The TSN is designed to help trauma patients and families survive, connect and rebuild

✓ Access to practical, every-day information
✓ Keep family members in the loop
✓ Join an on-line community forum
✓ Sign up for peer visitation, peer support group or NextSteps classes
✓ Give back: volunteer and contribute

Extending our Reach:
Online SM Programs

- SM works . . . but often difficult to access services due to limited program availability and practical barriers such as transportation, timing of classes
- Web based interventions can overcome these barriers & provide convenient access to expert information and cognitive behavioral therapies *supported* by on line communities
- Growing literature supports the benefits, but more research is needed to firmly establish their efficacy
- Low cost, good reach . . . *potentially* high efficacy !

Relative Advantages of Interventions Designed to Modify Behavior
Adapted from www.healthmedia.com
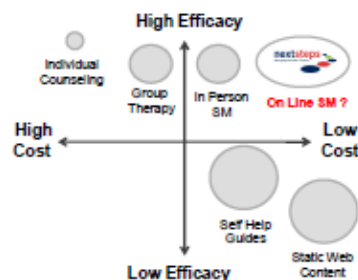
CDMRP Review
Development of NextSteps

On line SM Programs
Challenges . . . Opportunities

- Wide range of participant needs . . . web based platform allows for tailoring
- Participants at varying levels of computer self-efficacy . . . Also have access to wide range of hardware/connectivity
- Engaging survivors & maintaining their active participation on line vs. in-person
- High cost of producing materials to meet the needs of the young, computer savvy crowd
- The cutting edge is moving fast !

nextsteps
Managing Life After Trauma

1. Online, interactive <u>SM Lessons</u>- 2 per week for 6 weeks
2. Ongoing <u>Support Services</u>
   - One-on-one telephone orientation to program
   - Weekly on-line chats among class participants, facilitated by a SM Coach
   - Electronic bulletin board monitored by coaches
   - Computer and telephone based "help" desks
3. Access to <u>Resources</u>
   - Toolbox, workbook, private journal

6 Weeks . . . .12 Lessons

Lesson Content

Week 1: Taking Stock	Explore where you are on the Road to Recovery. Learn more about self management and the importance of being a self-manager. Improve your communications skills and begin to practice relaxation
Week 2: Moving Forward	Learn about problem-solving. Identify problems, turn them into goals you can reach, and learn how to tell if you are making progress.

Lesson Content

Week 3: Managing Your Emotions 1	Learn the differences between normal emotional ups and downs following an injury and major depression. Discover new ways to improve your mood.
Week 4: Managing Your Emotions 2	Focus on the body's natural stress response and anxiety. Learn how you can change your thinking to improve your health. Discover new relaxation techniques to deal with physical symptoms of stress.

CDMRP Review
Development of NextSteps

Lesson Content

Week 5: Family and Friends	Learn to identify helpful and unhelpful help. Focus on how your injury impacts your family and friends. Learn about Caregiver Stress and how you can help others manage challenges they are facing.
Week 6: Looking Ahead	Think big and explore your hopes and dreams. Discover how to manage setbacks and celebrate your success in NextSteps.

Format of Lessons is Standardized

- Welcome and Objectives
- Focus of this Week's Chat
- Opportunity to Review Last Lesson
- Review Practice Activity from Last Lesson
- Self Check- In with Feedback

LESSON CONTENT

- Take Home Message
- Home Exercise
- Relaxation Exercise

Learning Techniques Used

1. Interactive Didactics
2. Self Monitoring with Feedback
3. Videos
   - Survivor stories
   - Expert videos
   - Video demonstrations
   - Relaxation videos
4. Take Away Activities

Progress to Date – Overall Tasks

Website Development	
Wireframing	X
Graphic Design	X
XHTML Production	
Ruby on Rails Production	
Develop Learning Management System	X
Develop Online Community	X
Develop Chat	
Lesson Development	
Develop Course Builder	X
Build Editor for Lessons	X
Beta Testing	
Pilot Testing	
Modify for Application to Military	

Progress to Date – Lesson Specific

	WEEK					
	1	2	3	4	5	6
Develop Content	X	X	X	X	X	X
Identify and Design Active Learning Activities	X	X	X	X	X	X
Write Lesson Scripts	X	X	X	X	X	X
Record and Edit Audio	X					
Produce Videos	X	X	X	X	X	
Develop Wireframes	X	X	X	X	X	X
Develop Graphic Elements	X	X	X	X	X	X
Develop Interactive Flash Movies w/ Audio (XML)	X	X	X	X	X	X

Welcome to Week 3

CDMRP Review
Development of NextSteps

Welcome and Objectives

Subject of this Week's Chat

Opportunity to Review Previous Lesson

Review Practice Activity

Self Monitor HOW You are Doing

Feedback

March 30, 2009

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CDMRP Review
Development of NextSteps

Monitor WHAT You are Doing

Monitor WHAT You are Doing

Didactic Material

Survivor Stories
Illustrating Key Messages

Exercises – Fill In

Flip Chart Option

March 30, 2009

CDMRP Review
Development of NextSteps

Summary and Feedback

Self Screening – e.g. *for Depression*

Feedback

Fact or Fiction

Fact or Fiction

Expert Videos
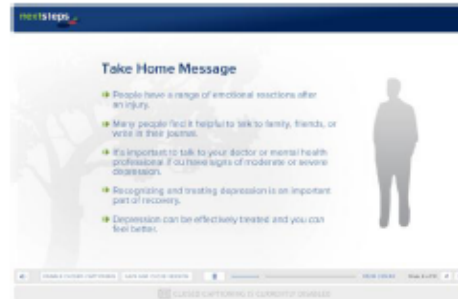
CDMRP Review
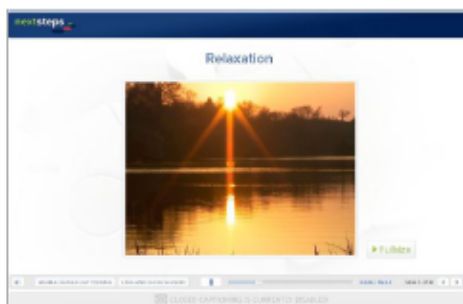# Development of NextSteps

Tools

Putting it Into Practice

Relaxation

Pulling it all Together
VIEW LESSON 1 'On-Line'

Timeline for Remaining Activities

Website Development	
Wireframing	X
Graphic Design	X
XHTML Production	April-July
Ruby on Rails Production	April-July
Develop Learning Management System	X
Develop Online Community	X
Develop Chat	April-July
Lesson Development	
Develop Corse Builder	X
Build Editor for Lessons	X
Beta Testing	Aug-Sept
Pilot Testing	Oct-Nov
Modify for Application to Military	Sept-Dec

Timeline for Remaining Activities

	WEEK					
	1	2	3	4	5	6
Develop Content	X	X	X	X	X	
Pilot and Obtain Consumer Input	X	X	X	X	X	
Identify and Design Active Learning Activities	X	X	X	X	X	X
Write Lesson Scripts	X	X	X	X	X	X
Record and Edit Audio	X	APRIL				
Produce Videos	X	X	X	X	X	APRIL
Develop Wireframes	X	X	X	X	X	
Develop Graphic Elements	X	X	X	X	X	X
Develop Interactive Flash Movies w/ Audio (XML)	X	APRIL - JULY				

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